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FEE TRANSMITTAL

For FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$)**330.00**

Complete if Known

Application Number	09/497,865
Filing Date	February 4, 2000
First Named Inventor	Donald C.D. Chang, et al.
Examiner Name	Gregory C. Issing
Art Unit	3662
Attorney Docket No.	PD-980034

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

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50-0383

Deposit Account Name
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The Director is authorized to: (check all that apply)

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1)				(\$)	-0-

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims		Extra Claims		Fee from below		Fee Paid	
Independent Claims		- 20** =		X			
Multiple Dependent		- 3** =		X			

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	86	2201	43	Independent claims in excess of 3	
1203	290	2203	145	Multiple dependent claim, if not paid	
1204	86	2204	43	** Reissue independent claims over original patent	
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent	
SUBTOTAL (2)				(\$)	-0-

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity | Small Entity

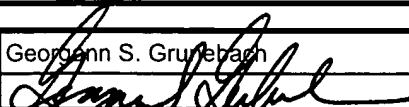
Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex parte reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330.00
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$)**330.00**

SUBMITTED BY

Name (Print/Type)	Georgann S. Grunberg	Registration No. (Attorney/Agent)	33,179	Telephone	310.964.4615
Signature		Date	August 26, 2004		

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This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	09/487,865
Filing Date	February 4, 2000
First Named Inventor	Donald C.D. Chang, et al.
Art Unit	3662
Examiner Name	Gregory C. Issing
Attorney Docket Number	PD-980034


ENCLOSURES (Check all that apply)

<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance communication to Technology Center (TC)
<input checked="" type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Terminal Disclaimer	Authorization to charge Customer Number 020991 Deposit Account for Appropriate Fees
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	
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<input type="checkbox"/> Response to Missing Parts/Incomplete Application	Remarks	
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	CUSTOMER NO. 020991	

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

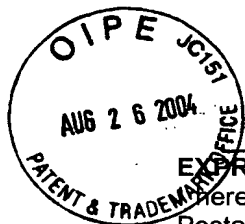
Firm or Individual name	Georgann S. Grunebach, Registration No. 33,179 Attorney for Applicants
Signature	
Date	August 26, 2004

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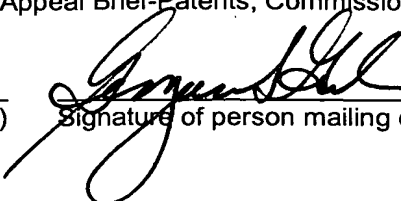
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Georgann S. Grunebach
(Typed name of person mailing correspondence)
Customer Number 020991


Signature of person mailing correspondence)

PATENT
Docket No. PD-980034

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:

Donald C. D. Chang

Serial No.: 09/497,865

Group Art Unit: 3662

Filed: February 4, 2000

Examiner: Gregory C. Issing

For: AN IMPROVED PHASED ARRAY TERMINAL FOR EQUATORIAL
SATELLITE CONSTELLATIONS

REPLY BRIEF TO THE EXAMINER'S ANSWER

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellant submits this Reply Brief in response to the Examiner's
Answer dated June 29, 2004.

REMARKS

Appellant has reviewed the Examiner's comments and provide the following in response thereto.

Appellant acknowledges the rejection should be *Karlsson* in view of *Chiba*, *Chang* and *Aoki*, not *Karlsson* in view of either one of *Chiba*, *Chang* or *Aoki*. Appellant, however, submits that this is of no consequence since each of the references fails to teach the same element. Further, there is no teaching or suggestion to form the combination. However, even if the combination is performed, as suggested by the Examiner, the present invention cannot be formed. The Appellant respectfully submits that the Examiner is forming a hindsight reconstruction of the present invention by picking and choosing elements from the ***four references*** used to form the combination. It should be noted that Claim 1 has seven elements and the Examiner is using four references to pick and choose the seven elements. As the Examiner points out, the *Karlsson* reference illustrates a rotating antenna that may be mechanically and electrically scanned. No teaching or suggestion is provided for a digital receiver that determines the strengths for coded element signals and locks onto the strongest signal having a corresponding element so that the corresponding element can be used for transmission. The details of the circuitry is not provided in the *Karlsson* reference. Although the *Chang* reference uses coded portions of the signals, no directivity or retrodirectivity aspect is taught or suggested in this reference. That is, there is no digital receiver that determines the signal strengths for the coded element signals and locks on to a strongest signal having a corresponding element so that the corresponding element can be used for transmission.

The Examiner uses the *Aoki* reference for teaching retrodirectivity. Appellant agrees that some retrodirectivity aspect is provided in the *Aoki* reference. However, looking at Fig. 2, the system operates in a completely different aspect. That is, the *Aoki* reference provides the circuitry 2-9 for each of the respective element antennas. Phase differences from the signals received at each of the elements are used to determine the direction of arrival of the incoming radio waves. That is, by measuring

the lengths 15a-15b, the direction may be obtained. Appellant respectfully believes that this is an inefficient use of resources due to the amount of redundant circuitry that is provided for each element. In a satellite system it is very desirable to reduce weight and cost. Thus, the present invention reduces the amount of circuitry compared to such systems as *Aoki*. The *Aoki* reference also does not teach a digital receiver that determines signal strengths for the coded element signals and locks on to a strongest signal having a corresponding element so that the corresponding element can be used for transmission. Further, the *Aoki* reference also appears to be directed towards a stationary system. Thus, no teaching or suggestion is provided in *Aoki* for use with a rotating plate and an element is also missing from the *Aoki* reference.

The *Chiba* reference also fails to teach a digital receiver determining signal strengths for the coded element signals and locking on to a strongest signal having a corresponding element. Thus, none of the references teaches or suggests this element. It is important to note that there are various portions of this element. "A digital receiver that is used to determine signal strengths for the coded element signals" and "locking on to a strongest signal having a corresponding element." Thus, it is not only the fact that signals strengths are determined but the signal strengths are determined for the coded element signals. Thus, it is the actual element outputs are not used. Element outputs for example, are used in the *Aoki* reference for determining the relative phases of the elements. In the present claim the coded signals are used rather than a direct output.

On page 4 of the Examiner's Answer, the Examiner states, "A digital receiver is inherent, while the determination of the strongest signal is clearly an obvious, and oldest, technique for locking on to a desired signal." The Examiner supports this assertion by pointing to the *Aoki* reference. However, as mentioned above, the *Aoki* reference does not operate in this manner. Appellant admits that digital receivers are not new. What is new is that the digital receiver determines signal strengths for the coded element signals rather than from each of the elements as in the *Aoki* reference. The *Aoki* reference uses triangulation techniques and phase changes for the

determination of the direction of the incoming signals. This is completely different than that recited with respect to the digital receiver of claim 1. In the next paragraph of page 4, the Examiner states, "...it would have been obvious to one having ordinary skill in the art to use processing that detects arrival direction from the maximum received intensity signal and transmit back in such direction in view of the teachings of Aoki et al so as to provide a retrodirective feature in a communication system and thereby increase the communication channel capabilities." Again, as mentioned above, the *Aoki* reference uses a completely different method for determining the direction. The *Aoki* reference does not use a strongest signal. Rather, each of the signals is used and a direction is determined from the phase angle differences. There is no teaching in the *Aoki* reference for using the strongest signal. Therefore, Appellant submits that a reformation of the *Aoki* reference is merely an attempt at a hindsight reconstruction of the present invention. Appellant respectfully request the Board to reverse the Examiner's position.

In the Examiner's Response to Argument, the Examiner states on page 6, "The claim language 'so that the corresponding element can be used for transmission' is met on several levels. Firstly, each or all of the elements *can be used* for transmission, thus the language fails to provide any distinguishing feature since any/all corresponding element(s) including the element receiving the strongest signal can be used for transmission and would be used in the event that all of the elements are generating the transmission beam. Secondly, the combination of references suggests determining the direction of arrival of all signals, including the strongest signal." Again, the Examiner points to the *Aoki* reference as specifically teaching this feature. As mentioned above, the *Aoki* reference does not teach a digital receiver determining signal strengths for the coded element signals and locking on to a strongest signal having a corresponding element. The *Aoki* reference uses phase differences in the signal that are best illustrated by signals 15a-15d and the equi-phase front 14. Differences in the phase are thus used to determine the direction and not the strongest signal. Admittedly, the phrase "so that the corresponding element can be used for transmission" would include a system that uses all elements for transmission.

However, “locking on to a strongest signal having a corresponding element” is not illustrated in the *Aoki* reference.

The Appellant has summarily argued each of the dependent claims because each of the dependent claims is a further limitation of its corresponding independent claim. Because at least one element from each of the independent claims is missing from each of the references, a combination of references cannot form the present invention. Such drastic modifications as suggested by the Examiner emphasize the hindsight reconstruction suggested thereby.

Claim 13 is a method that recites “determining signal strengths for the coded element signals and determining a strongest signal of the signal strengths and a corresponding element.” This is similar to the last element of Claim 1 and thus each and every element of Claim 13 is not taught or suggested in the various references.

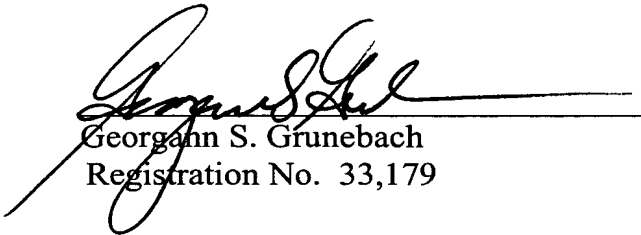
Claim 21 also recites a receiver for determining a corresponding element with a strongest signal strength so that a corresponding element can be used for transmission. As mentioned above, this is not taught or suggested in each of the references.

Claim 30 recites “determining a strongest beam and corresponding waveguide.” The *Aoki* reference specifically fails to teach or suggest this as mentioned above. Likewise, each of the other three references also does not teach or suggest this method.

Claim 37 also recites “a receiver for determining a strongest waveguide signal strength from a corresponding waveguide, so that the corresponding waveguide can be used for transmission.” This method also uses the coded waveguide signals which is not taught or suggested in the *Aoki* reference. Appellant therefore respectfully requests the Board to reverse the Examiner’s rejections with respect to each of the independent claims. Further, the dependent claims contain further limitations of their independent claims. Appellant therefore respectfully requests the Board to reverse the Examiner’s rejection of the dependent claims.

In light of the above remarks, Appellant respectfully requests the Board to reverse all of the Examiner's rejections. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited.

Respectfully submitted,



Georgann S. Grunebach
Registration No. 33,179

Date: August 26, 2004
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